

THE WAR ON PESTS

Perkins Explains Work Of Entomology Division.

In a report submitted to the Board of Agriculture and Forestry Wednesday afternoon Professor R. L. C. Perkins, the Territorial entomologist, outlines the work already accomplished by his department and also what it hopes to do.

Prof. Perkins says the chief work of the economic entomologists of these islands may be divided into two parts. (1) The prevention of the importation of injurious insects or plant diseases from other countries. (2) The destruction of injurious insects already present in the islands.

Mr. Perkins says that he has often wondered that while means were constantly employed to reduce the injurious insects already here, yet nothing was done to keep out harmful pests. "The injurious insects of today," he says, "are not those of twelve years ago, but more recent importations."

"It is also equally certain that of these more recent importations, a very large proportion, at any rate, might have been kept out of the country, had there been constantly an efficient inspecting entomologist. It is not that inspection has not been made in the past, but that it has of necessity been performed by those who have been without the entomological knowledge necessary to make it efficient. Even with the most rigid inspection some new injurious species, sooner or later, cannot be kept out. * * * In the last eighteen months of four or five consignments of plants, sent with a certificate, declaring them to be free from injurious insects, four were found to be infested with very injurious species. Two of these consignments, indeed, brought insects, which had they been specially imported to damage this country, could hardly have been better chosen."

"It may be thought that the introduction of injurious insects into this country might be prevented by indiscriminate treatment of all plants introduced. This, however, is impossible or inadvisable for two reasons. (a) A number of injurious insects cannot be certainly killed by any method of treatment without destroying the plant. (b) Some valuable plants in their natural condition, and many, when weakened by a long journey, will not stand the treatment necessary to kill insects, present or suspected. Therefore critical examination is necessary, and if insects, which cannot certainly be destroyed by treatment of the plants are present, the plants must be destroyed by fire or otherwise."

"At the present time I am personally examining all large consignments of plants (at least those from more dangerous localities whenever possible), leaving inspections of minor importance to one of my assistants. This plan is adopted because from long residence I am naturally familiar with practically all the species of insects of economic importance, in these islands, and generally with their distribution over the several islands. For this reason I am able to judge whether treatment is necessary or whether a plant can safely be admitted without treatment, while it would be impossible for a comparative stranger to decide such a point in the majority of cases. Unnecessary treatment, which, when a plant is already enfeebled after a voyage, may easily prove fatal, is to be avoided, and it is policy that the public who import valuable plants, often at great expense, should feel assured that their importations are not subjected to treatment without due cause."

"As I propose shortly to prepare a bulletin on the subject of insects imported into these islands, during the last eighteen months, it is unnecessary, at present, to refer further to this subject."

(2) The destruction of injurious insects already present. "There are two methods by which this may be attained. (a) By artificial means, or (b) By the aid of natural enemies of the injurious species. Whenever possible the latter method is far preferable. The use of the former is, though in some cases necessary, is equivalent to a confession of ignorance on the part of the entomologist, or at least of inability to apply his knowledge."

"Still to some extent it is necessary to use various kinds of liquids, in the form of sprays, and we advise the use of such in special cases, and at cost price properly made standard remedies have been furnished to those asking for them. Most of the injurious insects for which such treatment is necessary are ones of minor economic importance, and which do not cause sufficient loss to make it worth while sending to other countries for natural enemies. The two obvious disadvantages of artificial remedies are, firstly, they are costly and have to be regularly applied, year after year, or at even shorter intervals; Secondly, they are wholly inapplicable against the majority of our most injurious species."

"As matters stand, there has always been in the islands some question of great economic importance involving large money interests confronting the entomologist, and minor ones have to take their chance of being settled incidentally to this. At the present time four most important problems await solution, and these probably can only be attempted one at a time."

"The Division of Entomology, under the Board of Commissioners was so constituted that two of its members should visit other countries in company, in search of beneficial insects; while the other should permanently reside in the islands to handle and distribute the material sent by the traveling entomologists, to inspect introduced plants and prohibit the introduction of further pests; to carry on the ordinary work of

the office, chiefly in furnishing information on insects submitted for examination, to publish bulletins on entomological subjects, and to prepare collections of injurious and beneficial insects for the use of future workers. In this work the resident entomologists could be assisted by the traveling members of the Division in the intervals between their journeys; and during such intervals the resident members would have an opportunity to make a tour of inspection of the various islands with a view to ascertaining what beneficial insects were chiefly needed in various localities. It is quite clear that to accomplish this work the Division is by no means over large; the handling and rearing of beneficial insects alone for purposes of distribution being almost more than work enough for one man, and sometimes for months together, owing to the large amount of material on hand, the extreme care necessary both in the actual handling of the creatures, and in guarding against the escape of some species that might be prejudicial (not only to the work in hand, but also perhaps to work already accomplished) will absorb most of the time of the two resident members. Quite apart from this the ordinary work of the office is considerable as information is given on any insects, beneficial or injurious, submitted to the entomologist."

"I may state in passing that recently in addition to the parasites sent from California by the Superintendent of the Division, to be tried on cane leaf-hopper, which require the most careful attention, we have had on hand at one time thousands of the native parasite of the leaf-hopper, and have in addition parasites (from the Eastern States) for the green leaf-hopper so injurious in many localities to coffee, citrus, and many forest trees. To regularly supply so large a number of living creatures with food, to guard against the accidental inclusion of some predaceous insect, which in a night might destroy the labor of weeks, to make sure that the conditions of moisture and temperature are suitable for the species, a most important matter in this climate, all these require much care and consideration."

"It is most necessary that good reference collections should be made of the various insects whether beneficial or injurious. A slight step has been already made in this direction but it must be years before any adequate collection can be got together. This want of a collection is a great need, so that, when in the case of many important Hawaiian insects, to identify these the entomologist has to hunt through a mass of scattered literature, with often very unsatisfactory results, while in the case of obscure foreign species, the difficulties are hardly less great sometimes even greater, the country whence they have been imported being a matter of doubt. Our distance from entomologists of other countries precludes the possibility of getting assistance from them, except after much delay, and to be of any use an entomologist here must be self-dependent. Hardly less important is it to form reference collections of foreign insects injurious to important agricultural industries of these islands, for had we complete collections of this kind, we should know exactly what to guard against when importations of important plants are made, and new insect pests could be identified as they turn up. That new ones will turn up no one can possibly doubt, for an insect may be (and is sometimes known to be) present for years in a country before it becomes injurious. Also with these injurious insects should be collected where possible their natural enemies, so that in the event of their occurrence here we may know where to seek the latter. Of course, such a collection could only be made by the traveling entomologist as opportunity offered while he was engaged in the still more important work of collecting and forwarding beneficial insects, but certainly no opportunity should be lost of acquiring information of this nature."

"From time to time as occasion demands it is proposed to publish Bulletins on entomological subjects. For this purpose it is absolutely necessary that two series of Bulletins be issued, one dealing with purely technical entomology and the other with more general information. The Bulletin already issued on the leaf-hopper of the cane mostly belongs to the latter class but in the appendix is contained matter, which properly belongs to a technical Bulletin and the publication of such matter in a mixed form is most inadvisable and only could be excused by the urgent and immediate need of that Bulletin."

"Owing to the great mass of entomological literature published yearly, it is necessary that all papers of importance should be duly recorded annually and it greatly facilitates the work of the recorder that descriptions of species and similar technical matter, should be kept apart from general entomological information, and both from matters which have nothing whatever to do with either branch."

"For information of relatively small and momentary value the Press Bulletins are excellent, the daily papers being the quickest and best means of giving information to the general public."

"While a Bulletin of the class conveying general information can be written so as to be easily understood by one of ordinary intelligence, the technical Bulletin is written for the use of the entomologists themselves, whether present or future. Unless this is done it

REAL ESTATE TRANSACTIONS

HONOLULU, OAHU.

Mar. 15, 1904.

A. S. Cleghorn to Look Hop Yuen, L. Realty, Kapiwai, Pauoa, 10 50-100 A., 15 yrs. at \$200 per an. Mar. 5, 1904. V. L. Tenney of San Francisco to Chas. H. Atherton, P. A. Apr. 21, 1903. A. Dempster to M. S. Pereira, Rel. Int. in mtg. of M. G. Correa of lots 3 and 4, Blk. 5 Pearl City, Ewa, with note for \$700; int. in mtg. of M. & J. F. C. Abel of realty and bldgs. on Green St. with notes for \$1,250 and \$250. Con. \$2,500. Jan. 13, 1904.

I. Rubenstein to Leong Shee et al., Rel. 2 pcs. land, Kuwili, area 56-100 and 11-100 A. respectively; \$2,500. Mar. 12, 1904.

F. C. Betters to Allen & Robinson, Ltd., mtg. lot 1, Blk. 2, Kaimuki Tract, 15,000 sq. ft., bldgs., etc.; \$1,000, 3 yrs. at 7 per cent. Mar. 15, 1904.

Palolo Land & Imp. Co. to Mrs. L. Souza, Warranty D. Lots 3 and 4, Blk. 101, Palolo, area 3,000 sq. ft.; \$1,125. Mar. 4, 1904.

Hawaii Land Co. to M. Hui, Warranty D. Lots 12 and 13, Kapalama Tract, 7,040 sq. ft. Dec. 30, 1903.

Luke See Chin to Luke Mon Wong See, D. 1-3 int. in following property: lots 90, 91, 100 and 101 Kulaokahua; 10 62-100 A. at Kapia, and 3 51-100 A. at Kulaokahua, Koolau, Oahu; 138 A. at Paaulo, Hamakua, Hawaii; \$1. Mar. 12, 1904.

Luke Mon Wa to Choy Luke See, D. 1-3 int. in following property: lots 90, 91, 100 and 101 Kulaokahua; 10 62-100 A. at Kapia and 3 51-100 A. at Kulaokahua, Koolau, Oahu; 138 A. at Paaulo, Hamakua, Hawaii; \$1. Mar. 12, 1904.

Luke Tang Sing to Choy Luke See, D. 1-3 int. in following property: lots 90, 91, 100 and 101 Kulaokahua; 10 62-100 A. at Kapia and 3 51-100 A. at Kulaokahua, Koolau, Oahu; 138 A. at Paaulo, Hamakua, Hawaii; \$1. Mar. 12, 1904.

EWA, OAHU.

O. R. & L. Co. to K. E. Ashley, D. Lots 13, 14 and 15, Blk. 37, Pearl City; \$330. Mar. 12, 1904.

HILO, HAWAII.

M. F. Coelho to Laupahoehoe Sug. Co., agrt. 1st party agrees that 2nd party may for 4 1-2 years cultivate and plant sugar cane on 28 A. of lot 43, Maui Homesteads on the condition that the 1st party receives 1-10 and 2nd party 9-10 of all crops. Jan. 5, 1904.

N. KONA, HAWAII.

Ota to Yoshino, P. A. Jan. 22, 1904.

KAU, HAWAII.

J. Kaupane to Hawn. Agrl. Co., L. Realty, Waiala, 10 yrs. at \$40 a yr. Mar. 1, 1904.

DISTRICT COURT.

J. P. Ball vs. Becky Kaonohi Chang and husband Eddie Chang, \$205, professional services. Ridgway & Ridgway vs. Herbert, Humphris and Walters, asst., \$50, professional services.

The Peerless Preserving Paint Co., Ltd. vs. J. F. Colburn, asst., \$75, work and labor furnished.

P. H. Burnett vs. W. H. Thornton, deft., J. H. Fisher, Auditor, gar., asst., \$35.90 note.

P. H. Burnett vs. S. R. Jackson, deft., J. H. Fisher, gar., asst., \$20.50 note.

F. J. Turk vs. Estrella Turk, jdgmt. for deft.

simply means that the new comer has to go over all this work again, for if we exclude those imported for economic reasons, probably not less than 80 or 90 per cent of the species of insects that exist here are not found elsewhere, and therefore are not known to the outside economic entomologist.

"Even when one of our injurious species is well known and much written about elsewhere, I have found much of the information published to be valueless here, or even misleading, owing to the peculiar nature of our insular condition and climate."

"It adds greatly to the value of Bulletins that they should be illustrated, but illustrations unless they are perfectly accurate and first-class are to my mind worse than useless. In this respect we are unfortunately situated, having no special entomological artist in this country. It seems at present as though it will be necessary to prepare material for illustrating months before it is intended to publish a Bulletin on any particular subject, and send it to a first-class artist to be drawn, or painted, and plates executed, or the Bulletin will have to be published and the plate or plates that illustrate it will be issued with a later Bulletin. Both technical and general bulletins equally require illustrations, but in many cases the same figures might serve for one of either kind."

"Such in brief sketch is the work that the Division of entomology proposes to undertake, and indeed at the present time it is regularly performing, the chief obstacle being the lack of literature. A good many books have already been procured but many of the most important publications are still wanting and until these are obtained Bulletins otherwise prepared must await completion. The duties of the several entomologists are fairly well established but no fixed limits can ever be assigned in such matters as the duties must vary much as the entomological situation changes."

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